

Appl. No. 10/694,199
Amdt. Dated October 17, 2005

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Listing of Claims

Claim 1 (currently amended) A mobile host that moves both within and between interconnected wireless-access micro-mobility domains, wherein each domain comprises an IP server that provides the mobile host with a temporary care-of-address while the mobile host is present in the domain and which address is used to route packets to and from the domain, and wherein each domain further comprises a plurality of base stations interconnected through a set of nodes that automatically establish up-link and down-link routing paths within the domain to and from the mobile host, said mobile host comprising:

an MMP daemon that monitors the mobile host's movement between base stations and, based on broadcast messages from the base stations and the IP server within each domain, determines if the movement is within a domain or to a new domain, wherein if the movement is within the domain, said MMP daemon updates a down-link routing path in the domain to the mobile host, and wherein if the movement is to the new domain, said MMP daemon establishes a new down-link routing path in the new domain to the mobile host and causes the mobile host to obtain a new care-of-address from the IP server in the new domain;

a first sub-system for managing non-real-time applications at the mobile host wherein said first sub-system captures packets transmitted by the non-real time applications and changes an originating IP address of the transmitted packets to a permanent IP address associated with the mobile host and further captures received packets intended for the non-real time applications and changes the destination address of the received packets to the permanent IP address, and wherein said first sub-system monitors for the MMP daemon to change the mobile host's care-of-address and conveys detected changes to corresponding hosts to which the mobile host is conducting non-real time communications; and

a second sub-system for managing real-time applications at the mobile host wherein said second sub-system monitors for the MMP daemon to change the mobile host's care-of-address and ~~eveys~~ conveys detected changes to corresponding hosts to which the mobile host is conducting real-time communications.

2. (new) An integrated mobility management method for managing intra-domain and inter-domain mobility for both real time and non-real time applications in a wireless communication system comprising a backbone network, a plurality of wireless sub-networks connected to the backbone network, said wireless sub-networks comprising servers, routers, gateways, and base stations which communicate with mobile hosts, said method comprising the steps of

detecting movement of a mobile host between base stations, said mobile host having a temporary care of address,

detecting a gateway beacon message from the new base station to which the mobile host has moved,

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analyzing the beacon to determine if the mobile host has changed domains,
if the mobile host has changed domains, the mobile host detecting an advertisement message from a server within the subnetwork,
analyzing the advertisement message to determine if the mobile host has moved to a new sub-network,
if the mobile host has moved to a new sub-network, causing the mobile host to communicate to a server in the new sub-network to obtain a new care of address, and
updating a default router at the mobile host and sending a registration message using the new care of address to the new sub-network.

Claim 3 (new) The method in accordance with claim 2 further comprising, if the mobile host did not change domains, updating the default router at the mobile host and sending a cache hand-off message to the new base station.

Claim 4 (new) The method in accordance with claim 3 further comprising, if the mobile host did not change sub-networks, updating a default router at the mobile host and sending a registration message to the new base station.

Claim 5 (new) The method in accordance with claim 2 further comprising, after sending the registration message to the new base station, the mobile host sending an update message with the new care of address to a home location server connected to the backbone network and sending update messages with the new care of address to other hosts that are corresponding with the mobile host that has moved between base stations.

Claim 6 (new) The method in accordance with claim 5 wherein said home location register maintains a cache mapping the mobile host's permanent IP address and its current care of address.

Claim 7 (new) The method in accordance with claim 2, further comprising, after sending the registration message to the new base station, the mobile host sending a message containing the new care of address to session initiating protocol servers of other hosts that are corresponding with the mobile host that has changed base stations.

Claim 8 (new) The method in accordance with claim 2 wherein said mobile host has a permanent IP address used to reference the mobile host for non-real time applications and a session initiation protocol/uniform resource locator address used to reference the mobile host for real time applications, in addition to its current care of address.

Claim 9 (new) The method in accordance with claim 8 further comprising at the mobile host changing addresses of packets for real time applications and for non-real time applications.

Claim 10 (new) An integrated mobility management method for managing intra-domain and inter-domain mobility for both real time and non-real time applications in a wireless communication system comprising a backbone network, a plurality of wireless sub-networks connected to the backbone network, said wireless sub-networks comprising base stations which communicate with mobile hosts and said mobile hosts each having in a micro-mobility management system (MMP), an SIP macro-mobility management system, and an MIP-LR macro-mobility management system, said method comprising

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detecting if a mobile host has moved from one domain to an adjacent domain or has moved within a single domain,

if the mobile host has moved within a single domain, activating the MMP mobility management system, and

if the mobile host has moved to an adjacent domain, determining if the mobile host is engaged in a real time or a non-real time communication, activating the SIP mobility management system if the mobile host is engaged in a real-time communication and activating the MIP-LR mobility management system, if the mobile host is engaged in a non-real time communication.

Claim 11 (new) The method in accordance with claim 10 wherein said mobile host has a permanent IP address which non-real time applications use to reference the mobile host and a SIP URL which real time applications use to reference the mobile host.

Claim 12 (new) The method in accordance with claim 11 wherein the mobile host also is configured with a care-of-address, said method further comprising updating the care-of-address as the mobile moves between sub-networks.

Claim 13 (new) The method in accordance with claim 12 wherein said updating the care-of-address comprises the mobile host running a MMP daemon that forces the mobile host to obtain the new care-of-address so that packets for the mobile host are properly routed through the backbone network to the new sub-network.

Claim 14 (new) The method in accordance with claim 10 wherein said step of detecting whether a mobile host has moved within a single domain or moved from one domain to an adjacent domain comprises the mobile host running a MMP daemon that monitors the mobile host's movement.

Claim 15 (new) The method in accordance with claim 14 wherein said MMP daemon registers with a new domain to establish routing within that domain upon detecting movement from one domain to an adjacent domain.

Claim 16 (new) The method in accordance with claim 10 wherein, when a mobile host that is communicating with a correspondent host moves to an adjacent domain, a MMP daemon in the mobile host forces the mobile host to obtain a new care-of-address of the mobile host and the SIP system in the mobile host detects this change and conveys this new care-of-address to the SIP system of the correspondent host.